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ABSTRACT

This learning module provides students with practice in applying mathematical operations to vocational agriculture. The module consists of unit objectives, definitions, information, problems to solve, worksheets suitable for various levels of vocational agriculture instruction, and answer keys for the problems and worksheets. This module, which covers the metric system, provides practice in using the metric system to solve common farm applications, such as mixing and pouring concrete and converting English to metric measurements. (KC)

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THE METRIC SYSTEM

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TEACHING UNIT: THE METRIC SYSTEM

TRAINING ACTIVITIES: (1) Conversions between the English and Metric Systems.

(2) Solving stated problems

UNIT OBJECTIVES: (1) To provide experiences which will enable students to develop an understanding of how to use basic computational skills to solve metric problems.

(2) To present arithmetic concepts involving the metric system in a manner keeping with the interest of Vocational Agriculture students.

TABLE OF METRIC MEASURES:

Metric Prefixes

milli	$\frac{1}{1000}$ or .001
centi	$\frac{1}{100}$ or .01
deci	$\frac{1}{10}$ or .1
deka	10
hecto	100
kilo	1000

Capacity

10 milliliters (ml) = 1 centiliter (cl)
10 cl = 1 deciliter (dl)
10 dl = 1 liter
10 liters = 1 dekaliter (dal)
10 dal = 1 hectoliter (hl)
10 hl = 1 kiloliter (kl)

Length

10 millimeters (mm) = 1 centimeter (cm)
10 cm = 1 decimeter (dm)
10 dm = 1 meter (m)
10 m = 1 dekameter (dam)
10 dam = 1 hectometer (hm)
10 hm = 1 kilometer (km)

Weight

10 milligrams (mg) = 1 centigram (cg)
10 cg = 1 decigram (dg)
10 dg = 1 gram (g)
10 g = 1 dekagram (dag)
10 dag = 1 hectogram (hg)
10 hg = 1 kilogram (kg)

METRIC-ENGLISH EQUIVALENTS:

1 inch = 2.54 cm
1 foot ≈ .305 m
1 yard ≈ .91 m
1 mile ≈ 1.61 km

1 sq in ≈ 6.5 sq cm
1 sq ft ≈ .09 sq m
1 sq yd ≈ .8 sq m
1 acre ≈ .4 hectare

1 cu in ≈ 16.4 cc
1 cu ft ≈ .03 cu m
1 cu yd ≈ .8 cu m

1 pint ≈ .47 liter
1 quart ≈ .95 liter
1 gallon ≈ 3.79 liters

1 ounce ≈ 28.3 g
1 pound ≈ .45 kg

NAME _____

INSTRUCTIONS: Convert the following metric units to English units. Round all answers to nearest one hundredth unit.

OIL CAPACITY	
Crankcase	6.5 liters (l)
Oil Filter	.5 liters (l)
FUEL CAPACITY	
Gasoline	3.5 dekaliters (dal)
RADIATOR CAPACITY	
Purified Water	12 liters (l)

1. Farmer Jones purchased a new tractor and the owner's manual contained the chart pictured above. According to the chart, the total oil capacity of the tractor, including both the crankcase and oil filter is equivalent to how many quarts? _____ quarts

2. How many gallons of gasoline would it take to fill the fuel tank of the tractor to capacity? _____ gallons

3. The radiator of the tractor will hold how many gallons of water when filled to capacity? _____ gallons

4. Farmer Smith is raising 16 hectares of tobacco, 20 hectares of wheat, and 88 hectares of corn. How many total acres of crops is farmer Smith raising? _____ acres

5. A herbicide is to be mixed at a rate of 60 milliliters per gallon of water. How many pints of the herbicide should be mixed with 20 gallons of water? _____ pints

6. If a local mill is paying $125.00 per ton (2000 pounds) for grain corn, how much money would you receive from a truck load of grain weighing 4545.454 kilograms (kg)? _____ dollars

NAME _____

INSTRUCTIONS: Complete the following problems.

1. A truck's gas tank will hold 1.8 dekaliters of gasoline. If the truck can be driven 360 kilometers before running out of fuel, how many kilometers per liter will the truck average?

2. A greenhouse grower has an empty bench that measures 3.4 meters by 10.2 meters. If she fills the bench with 12.7 centimeter potted mums by placing one pot per each .09 square meter, how many potted mums can she put on this bench?

3. Ms. Jones' tractor uses 8.4 liters of fuel per hectare when plowing at a rate of 1.2 hectares per hour. How much fuel will the tractor use per hour?

4. If a farm fuel storage tank holds 1000 liters of fuel, how many dekaliters will be in the tank when it is 1/3 full?

5. Sandy bought her FFA steer when it weighed 239 kilograms. She has had the steer for 46 days and it has averaged gaining 1.1 kilograms per day. How much does the steer now weigh?

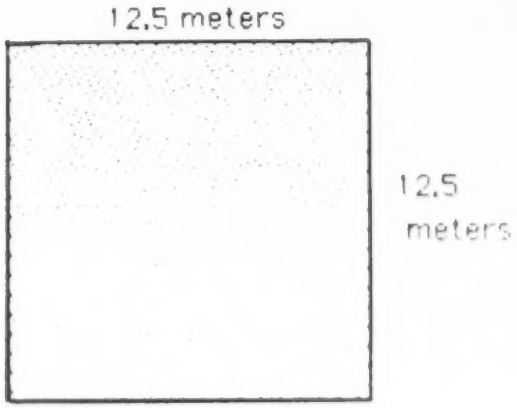
Name _____

WORKSHEET

COURSE: **Agricultural Production II**

COMPETENCY: #020 - "Mix and pour concrete for a given job"

INSTRUCTIONS: Complete the problems below. Round answers to nearst hundredth of a unit.



concrete parking pad

1. Determine how many cubic yards of concrete it will take to pour the above pad 15.24 centimeters deep. _____ cubic yards.

2. Determine how many kilograms of sand will be in each cubic yard of concrete used in the pad, if each cubic yard contains 1500 pounds of sand. _____ kilograms.

3. Each cubic yard of concrete used to pour the pad contained 1 metric ton of gravel. How many kilograms of gravel were used in each cubic yard? (***NOTE***: one metric ton = 2205 pounds.) _____ kilograms.

4. How many more kilograms of gravel than sand were used in each cubic yard of the concrete? _____ kilograms.

ANSWER KEY FOR MODULE TITLED "THE METRIC SYSTEM"

Module Training Unit (Convert Metric to English):

(1.) 7.36 (2.) 9.25 (3.) 3.12 (4.) 310 (5.) 2.25
(6.) 631.31

Module Training Unit (Solve Metric Problems):

(1.) 20 (2.) 385 (3.) 10.08 liters (4.) 33.33
(5.) 289.6 kilograms

Competency #020 Worksheet:

(1.) 32.15 (2.) 375 (3.) 992.25 (4.) 317.25